WHAT IS CLAIMED IS:

1. A method for remodeling luminal tissue, said method comprising:

positioning a vibrational transducer at a target site in a body lumen of a patient; and

energizing the vibrational transducer to produce acoustic energy under conditions selected to induce tissue remodeling in at least a portion of the tissue circumferentially surrounding the body lumen.

2. A method as in claim 1, wherein the acoustic energy is produced under conditions which at least shrink the tissue.

3. A method as in claim 1, wherein the acoustic energy is produced under conditions which reduces the compliance of the tissue in either or both the radial and longitudinal directions.

4. A method as in claim 1, wherein the acoustic energy is produced under conditions which at least induce collagen formation in the tissue.

5. A method as in claim 1, wherein the acoustic energy is produced under conditions which at least cause cavitation in the tissue.

6. A method as in claim 1, wherein the acoustic energy is produced under conditions which at least interrupt nerve pathways in the tissue.

7. A method as in claim 1, wherein the acoustic energy is produced under conditions which at least interrupt the reception and/or production of biochemicals in the tissue.

8. A method as in claim 1, wherein the acoustic energy is produced under conditions which at least interrupt the ability of the tissue to absorb food.

9. A method as in claim 1, wherein the acoustic energy is produced under conditions which at least selectively destroy intestinal metaplasia in the esophagus.

10. A method as in claim 1, wherein the transducer is energized to produce acoustic energy in the range from 10 W/cm^2 to 100 W/cm^2.

11. A method as in claim 1, wherein the transducer is energized at a duty cycle from 10 % to 100 %.

12. A method as in claim 1, wherein the transducer is energized under conditions which heat the tissue to a temperature in the range from 55°C to 95°C.

13. A method as in claim 1, further comprising cooling the luminal surface tissue while tissue beneath the surface is heated.

14. A method as in claim 1, wherein positioning the vibrational transducer comprises introducing a catheter which carries the transducer into the body lumen.

15. A method as in claim 14, wherein positioning further comprises inflating a balloon in the catheter to at least partly engage the luminal wall and locate the transducer at a pre-determined position relative to the target site.

16. A method as in claim 15, wherein the transducer is inside the balloon and inflating the balloon with an acoustically transmissive material which centers the transducer within the lumen and enhances transmission of the acoustic energy to the tissue.

17. A method as in claim 15, wherein the transducer is located between a pair of axially spaced-apart balloons and inflating the balloon centers the transducer within the lumen, further comprising introducing an acoustically transmissive medium between the balloons to enhance transmission of the acoustic energy to the tissue.

18. A method as in claim 15, further comprising moving the transducer relative to the balloon(s) in order to focus or scan the acoustic energy axially on the luminal tissue surface.

19. A method as in claim 16, wherein the acoustically transmissive medium is cooled to cool the luminal tissue surface.

20. A method as in claim 1, further comprising monitoring temperature at the luminal tissue surface.

21. A method as in claim 1, further comprising monitoring temperature below the luminal tissue surface.

22. A method as in claim 1, wherein energizing comprises focusing the acoustic energy beneath the luminal tissue surface.

23. A method as in claim 1, wherein energizing comprises focusing the acoustic energy at or just before the luminal tissue surface.

24. A method as in claim 27, wherein the vibrational transducer comprised a phased array.

25. A method as in claim 24, wherein the phased array is selectively energized to focus the acoustic energy at one or more desired locations in the tissue surrounding the body lumen.

26. A method as in claim 1, wherein positioning the vibrational transducer comprises:

introducing a cannula to the target site;

expanding a balloon on the cannula at the target site with an acoustically transmissive medium; and

selectively directing the vibrational transducer within the balloon to remodel targeted tissue.

27. A method as in claim 26, further comprising viewing the target tissue through a scope in or on the cannula while directing the vibrational transducer.

28. A method as in claim 26, wherein selectively directing comprises deflecting and/or rotating a beam transducer.

29. A method as in claim 26, wherein selectively directing comprises axially translating a circumferential array transducer.

30. A method as in claim 26, wherein selectively directing comprises everting the transducer to direct energy against tissue surrounding an opening to the body lumen.

31. A method as in claim 30, wherein the balloon is expanded over the entire opening.

32. A method as in claim 31, wherein the balloon is expanded over a location adjacent to the opening.

33. A method as in claim 26, wherein selectively directing comprises pivoting at least one transducer from a fixed location within the balloon.

34. A method as in claim 33, further comprising deflecting at least one additional transducer from a fixed location within the balloon.

35. A method as in claim 26, wherein selectively directing comprises expanding a second balloon disposed over the vibrational transducer, wherein the second balloon may be axially translated within the first balloon.

36. A method as in claim 1, wherein positioning the vibrational transducer comprises: expanding a balloon over an opening at one end of the body lumen;

filling the end of the lumen over the balloon with an acoustically transmissive medium; and

positioning the vibrational transducer within the medium to direct acoustic energy at the luminal tissue.

37. A method as in claim 1, wherein positioning the transducer comprises:

capturing luminal tissue between opposed elements, wherein the transducer is disposed on one of the elements; and

directing energy from the transducer into the captured tissue.

38. A method as in claim 37, wherein capturing comprises clamping with movable elements.

39. A method as in claim 37, wherein capturing comprises applying a vacuum to the tissue to draw said tissue between the opposed elements.

40. A method as in claim 1, wherein the body lumen is the esophagus and the patient suffers from gastroesophageal reflux disease (GERD).

41. A method as in claim 40, wherein the acoustic energy remodels the tissue surrounding a lower esophageal sphincter.

42. A method as in claim 1, wherein the body lumen is the stomach and the patient suffers from a hiatal hernia.

43. A method as in claim 42, wherein the acoustic energy remodels the tissue surrounding a diaphragmatic sphincter.

44. Apparatus for remodeling the lower esophageal sphincter, said apparatus comprising:

a catheter adapted to be esophageally introduced to the lower esophageal sphincter (LES); and

a vibrational transducer on the catheter adapted to deliver acoustic energy to the tissue of the LES in order to lessen gastroesophageal reflux.

45. Apparatus as in claim 44, further comprising an inflatable balloon on the catheter, wherein said balloon is adapted when inflated to position the catheter within the LES so that the transducer can deliver energy to the LES.

46. Apparatus as in claim 45 wherein the transducer is positioned coaxially with the balloon.

47. Apparatus as in claim 45, further comprising means for inflating the balloon with an acoustically transmissive medium.

48. Apparatus as in claim 45 wherein the transducer is positioned between a pair of spaced-apart balloons.

49. Apparatus as in claim 44, further comprising means for delivering an acoustically transmissive medium between the balloons.

50. Apparatus as in claim 44, further comprising means for cooling the acoustically transmissive medium.

51. Apparatus as in claim 44, further comprising means for measuring temperature at or beneath the luminal wall.

52. Apparatus as in claim 44, further comprising means to axially translate the transducer relative to the catheter.

53. Apparatus as in claim 44, wherein the transducer comprises a phased array.

54. A system comprising:
apparatus as in claim 44; and
a cannula having a channel for receiving and deploying the catheter.

55. A system as in claim 54, further comprising a viewing scope which is part of or introducable through the cannula.

56. A system as in claim 54, wherein the cannula further comprises an inflatable balloon over a distal end, wherein the catheter is extendible from the cannula into the balloon when the balloon is inflated.

57. A system as in claim 56, wherein the vibrational transducer on the catheter is deflectable and/or rotatable and/or evertable within the balloon when inflated.

58. A system as in claim 56, wherein the vibrational transducer on the catheter comprises a circumferential array and is axially translatable within the balloon when inflated.

59. A system as in claim 56, wherein the transducer is pivotally mounted on the catheter.

60. A system as in claim 56, wherein the transducer is mounted on at least one of a pair of spaced-apart elements on the catheter configured to receive target tissue therebetween.

61. A system as in claim 60, wherein the spaced-apart elements are movable to clamp tissue therebetween.

62. A system as in claim 60, wherein a vacuum source is disposed on the catheter to selectively draw tissue into the space between the spaced-apart elements.